

BOILER PERFORMANCE TESTING

SCOPE OF WORK:

The Intermountain Power Service Corporation (IPSC) is upgrading plant performance and capacity by replacing the high pressure (HP) turbine, adding additional superheater platen surface area and providing an overfire air system. We will be conducting performance testing on the Boiler following the Intermountain Generating Station (IGS) Unit 1 Major Outage.

The objective of the Boiler Acceptance Testing is to determine boiler efficiency, boiler emissions- NOx and CO levels, and fly ash unburned carbon content at main steam and hot reheat temperatures of 1005 F. This information is required to determine Boiler contract penalties and incentives.

Tuning and diagnostics will be accomplished using the combustion gas analyzers, by conducting multipoint gas sampling at the boiler outlet duct to establish NOx, CO, O2, CO2 & temperature profiles at both 875 MWgross and 950 MWgross load levels. There will be a 64 point grid (32 points of both east and west sides) to determine the degree of gas stratification. Knowing the amount and location of stratification (high and low zones), it can be used as a diagnostics tool to tune burners or overfire dampers to minimize this effect. Typically, extremely high or low values for CO and NOx reflect bad actors (incomplete combustion) which should be tunable. The CO2 and O2 analyzers will be used to determine air flow balancing, plus will be used for boiler efficiency (gas loss method) calculations.

Additionally, the test O2 analyzers will be used to reconcile accuracies with the station O2 analyzers (both test grids are at the same location).

The following test conditions will be determined:

- Main Steam and Hot Reheat temperatures
- Main Steam and Hot Reheat attempering spray flows
- Boiler Section Cleanliness factors
- coal quality (proximate and ultimate analysis)
- fly ash (unburned carbon content)
- bottom and air heater ash (unburned carbon content)
- Boiler Efficiency (heat loss method)